

CLAIMS

1. A hybrid automatic repeat request method for transmitting data packets from a transmitting entity to a receiving entity via a data channel, the method comprising the steps of:

receiving a feedback message from the receiving entity at the transmitting entity, wherein the feedback message indicates whether a data packet has been successfully received by the receiving entity,

in case the feedback message indicates that the data packet has not been received successfully, transmitting a retransmission data packet to the receiving entity after a predetermined time span upon having received said feedback message, and

soft combining the retransmission data packet with the previously received data packet at the receiving entity.
2. The method according to claim 1, wherein the retransmission data packet is transmitted at the beginning of a transmission time interval.
3. The method according to claim 1 or 2, wherein the predetermined time span is larger or equal to the processing time required for processing the feedback message.
4. The method according to one of claims 1 to 3, the method further comprising the steps of:

controlling air interface resources for data transmissions at a scheduling entity,

reserving resources for transmitting said retransmission data packet after said predetermined time span on the air interface.
5. The method according to one of claims 1 to 4, further comprising the steps of:

determining at the transmitting entity whether the resources allocated to the transmitting entity are sufficient to transmit the retransmission data packet after said predetermined time span and other data pending for transmission within the same transmission time interval, wherein the data pending

transmission has a higher transmission priority than the retransmission data packet,

if not, transmitting said data pending for transmission in the transmission time interval and postponing the transmission of the retransmission data packet to a later transmission time interval.

6. The method according to one of claims 1 to 5, further comprising the steps of:

the transmitting entity determining whether the transmission power required for transmitting the retransmission data packet after said predetermined time span and data pending for transmission within the same transmission time interval is lower than a maximum transmission power allocated to the transmitting entity, wherein the data pending for transmission has a higher priority than the retransmission data packet.

7. The method according to claim 6, further comprising the steps of:

transmitting the data pending for transmission and said retransmission data packet after said predetermined time span using the allocated maximum transmission power, if the required transmission power is larger than the allocated maximum transmission power.

8. The method according to claim 7, wherein the retransmission data packet is transmitted at a power level lower than required for its transport format.

9. The method according to claim 6, further comprising the steps of

transmitting the data pending for transmission, and aborting the transmission of said retransmission data packet after said predetermined time span, if the required transmission power required for transmitting the retransmission data packet after said predetermined time span and data pending for transmission is larger than the allocated maximum transmission power.

10. The method according to claim 9, further comprising the step of transmitting a scheduling request message from the transmitting entity to a scheduling entity to request resources for transmitting the retransmission data packet, if data transmission is performed in the time and rate controlled scheduling mode.

11. The method according to claim 10, further comprising the step of:

awaiting the scheduling request message from the transmitting entity and maintaining the content of a buffer temporarily storing the data packet for which a feedback message has been transmitted to the transmitting entity at the receiving entity, if the retransmission data packet is not received after said predetermined time span and if data transmission is performed in the time and rate controlled scheduling mode.

12. The method according to claim 10, further comprising the step of transmitting the retransmission data packet at a point in time after the elapse of said predetermined time span, if data transmission is performed in the rate controlled scheduling mode.
13. The method according to claim 12, further comprising the step of:

awaiting the retransmission data packet from the transmitting entity and maintaining the content of a buffer temporarily storing the data packet for which a feedback message has been transmitted to the transmitting entity at the receiving entity, if the retransmission data packet is not received after said predetermined time span.
14. The method according to one of claims 1 to 13, wherein data transmission is carried out on an enhanced uplink dedicated transport channel.
15. A mobile station for transmitting data packets to a base station using a HARQ retransmission protocol applying soft combining of data packets in a mobile wireless communication system comprising the mobile station and the base station, the mobile station comprising:

receiving means for receiving a feedback message from the receiving entity at the transmitting entity, wherein the feedback message indicates whether a data packet has been successfully received by the receiving entity, and

transmitting means for transmitting a retransmission data packet after a predetermined time span upon having received said feedback message, in case the feedback message indicates that the data packet has not been received successfully.
16. The mobile station according to claim 15 adapted to perform the hybrid automatic repeat request method according to one of claims 1 to 14.

17. A mobile station for transmitting data packets to a base station using a HARQ retransmission protocol applying soft combining of data packets in a mobile wireless communication system comprising the mobile station and the base station, the mobile station comprising:

receiving means for receiving a retransmission mode indicator in a control message, wherein the retransmission mode indicator indicates whether to perform a packet retransmission method according to one of claims 1 to 14 or whether to perform a hybrid automatic repeat request method different therefrom, and

transmission means for transmitting retransmission data packets on a data channel according to an packet retransmission mode indicated by the retransmission mode indicator.
18. The mobile station according to claim 17, wherein the control message is a radio bearer setup message.
19. The mobile station according to claim 17, wherein the receiving means is adapted to receive the control message for an established data channel and

wherein the mobile station further comprises switching means for switching the packet retransmission mode of the transmission means in accordance with the transmission mode indicator.
20. The mobile station according to claim 19, wherein the control message is a radio bearer reconfiguration message.
21. The mobile station according to one of claims 15 to 20, wherein the transmission means is adapted to perform one of different hybrid automatic repeat request methods in response to the scheduling mode employed for data transmission.
22. A base station for transmitting data packets to a mobile station using a HARQ retransmission protocol applying soft combining of data packets in a mobile wireless communication system comprising the mobile station and the base station, the mobile station comprising:

receiving means for receiving a feedback message from the receiving entity at the transmitting entity, wherein the feedback message indicates whether a data packet has been successfully received by the receiving entity, and

transmitting means for transmitting a retransmission data packet for the data packet after a predetermined time span upon having received said feedback message, in case the feedback message indicates that the data packet has not been received successfully.

23. The base station according to claim 22 adapted to perform the method according to one of claims 1 to 14.
24. The base station according to one of claims 22 to 23, wherein the transmission means is adapted to perform one of different hybrid automatic repeat request methods in response to the scheduling mode employed for data transmission.
25. A radio network controller configuring at least one parameter of a HARQ retransmission protocol applying soft combining of data packets, the HARQ retransmission protocol being used for data transmissions by a mobile station in a mobile wireless communication system comprising the mobile station and the radio network controller, the radio network controller comprising:

transmitting means for transmitting a retransmission mode indicator in a control message to the mobile station, wherein the retransmission mode indicator indicates whether to perform a hybrid automatic repeat request method according to one of claims 1 to 14 or whether to perform a hybrid automatic repeat request method different therefrom.
26. A wireless communication system comprising a mobile station according to one of claims 14 to 20 and a base station according to one of claim 21 or 23, wherein the communication system is adapted to perform a HARQ protocol for transmitting data packets from the mobile station to the base station via a communication channel.
27. The wireless communication network further comprising a radio network controller according to claim 24.